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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/546,628	04/19/2006	Heinz Ragossnig	14219-098US1 P2003,0098 U	3285
26161	7590	04/25/2007	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			DOUGHERTY, THOMAS M	
			ART UNIT	PAPER NUMBER
			2834	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/25/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/546,628

Applicant(s)

RAGOSSNIG ET AL.

Examiner

Thomas M. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>805, 706, 207</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-5 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Heinzemann et al. (US 2006/0055288). Heinzemann et al. show (fig. 2b0 a multilayer electrical component comprising: a plurality of ceramic (see cl. 1) layers (2) disposed along an axis, a plurality of electrode layers (3, 4) disposed among the plurality of ceramic layers (2) and a ceramic breach layer (between 3 and 4 in the figure) disposed between a first and a second ceramic layer (2) of the plurality of ceramic layers along the axis, the ceramic breach layer having a lower breach stability than the plurality of ceramic layers (2) with regard to tensile stresses in the direction of the axis.

The multilayer electrical component comprises a monolithic component.

The component further comprising a plurality of breach layers disposed at multiple points along eh axis.

The plurality of electrode layers (3, 4) includes a first (3) and a second electrode layer (4) adjacent to the ceramic breach layer, the first and second electrode layers

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having an electrical polarity that is the same as one of the electrical polarities of the component.

The breach layer comprises the same ceramic material as the ceramic layers (2).

The component comprises a piezoelectric actuator. See claim 1.

Heinzmann et al. show (fig. 2b) and note a plurality of green ceramic films (see paragraph [0008] and claim 4) comprising: a ceramic powder, and an organic bonding agent (see claim 3), wherein at least one of the green films of the plurality of green films has an increased volumetric content of bonding agent (see claim 5) compared to the other green films.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinzemann et al. (US 2006/0055288). Given the invention of Heinzemann et al., they do not specifically note that the breach layer comprises a material having a greater porosity than the plurality of ceramic layers. They do not note that the porosity of the breach layer is between about 1.2 and about 3 times greater than the porosity of the ceramic layers. They do not specifically disclose that the volumetric content of bonding agent in the at least one of the green films is increased by a factor of about 1.6 to about

3 times the volumetric content of bonding agent of at least some of the other green films.

Regarding the porosity of the Heinzemann et al. device, they note at paragraph [0062] that porosity can be manipulated to produce the desired breach formation. Clearly then, Heinzemann et al. understand the uses of porosity in the ceramic materials so that specific characteristics can be achieved in the uses of those ceramic materials.

It would have been obvious to one having ordinary skill in the art to have a breach layer comprised of a material having a greater porosity than the plurality of ceramic layers by about 1.2 to about 3 times greater than the porosity of those ceramic layers and increase the volumetric content of bonding agent in the at least one of the green films by a factor of about 1.5 to about 3 times the volumetric content of bonding agent of at least some of the other green films in the device of Heinzemann et al., if that is not the case, in order to assure that the desired breach may occur, such as is shown by Heinzemann et al. It would appear that the applicants' determined range for porosity and bonding agent volume is achieved by Heinzemann et al., though they don't specifically disclose it, or else their desired breach would not occur. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, in this case the breach features, discovering the optimum or workable ranges (of porosity and bonding agent volume) involves only routine skill in the art. In re Aller, 105 USPQ 233.

Conclusion

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Miyata et al. ('428) teach provision of layers of stress relief in piezoelectric stacks. Inoue et al. ('239) teach stress relieving layers comprising breach layers. The remaining prior art cited reads on at least some aspects of the claimed invention.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd
tmd

April 16, 2007


TOM DOUGHERTY
PRIMARY EXAMINER